REMARKS/ARGUMENTS

Applicant has reviewed and considered the Office Action dated May 19, 2005. Claims 1-18 are pending in the present application.

Rejections under 35 U.S.C. 102

Claims 1-17 are rejected under 35 U.S.C. § 102(a) as being anticipated by U.S. Patent No. 6,703,257 Takeuchi et al. (hereinafter "Takeuchi"). Applicant respectfully traverses the rejection for at least the following reasons.

Claim 1 recites a solid-state sensor device for sensing acceleration along a specific direction, comprising: a substrate containing a cavity; a mass being disposed in the cavity; a thin film toroidal support membrane disposed on the mass; and a plurality of thin film piezoelectric elements disposed on the support membrane and arranged to generate an electrical signal upon accelerating the sensor device along the specific direction.

Takeuchi discloses a piezoelectric/electrostrictive film type elements and process for producing the same having a substrate made of a ceramic material composed mainly of completely stabilized or partially stabilized zirconium oxide, and a piezoelectric/electrostrictive operating section integrated onto the ceramic substrate by a film-forming method. However, Takeuchi does not disclose or teach a solid state device built from thin films as recited in claim 1. More particularly, Takeuchi does not disclose or teach a solid-state device having a thin film toroidal support membrane disposed on the mass and a plurality of thin film piezoelectric elements disposed on the support membrane as recited in claim 1. The support for these features can be found at least on: 1) page 3, lines 2-5, "Similar to Integrated Circuits (ICs), a solid-state piezoelectric device is built up by a series of thin films, typically less than or about 5 micron (0.005 mm) in thickness"; 2) page 4, lines 6-8, "Thin-film piezoelectric materials are deposited and defined on an atomic scale utilizing fabrication processes common in the semiconductor industry"; 3) page 4, line 11, "Thin-film piezoelectric elements are defined using

microlithography..."; 4) page 4, lines 19-22, "Thin-film piezoelectric elements are defined using batch processing techniques common in the semiconductor industry. A typical deposition, pattern transfer, and etch sequence on a single silicon wafer defines literally millions of precision piezoelectric elements on thousands of transducers"; and 5) Figures 2 and 3 illustrate integration of thin film device on a silicon wafer (consistent with our terminology of semiconductor processing). By contrast, Takeuchi repeatedly describes a ceramic substrate specifically zirconium oxide (not semiconductor or silicon or a solid-state device), for instance, in col. 3 lines 15-18, col. 3 lines 45-49, col. 5 lines 18-22, and col. 5 lines 26-27.

In addition, by contrast, Takeuchi describes in col. 14 lines 23-29 the process for making the device (Figure 14) as "... is produced by laminating intermittent-layered green sheets of ... forming a laminate by compression bonding, obtaining a fired body by integrally firing the laminate, forming the piezoelectric elements 21a and 21b by a thick film-forming method and firing the resultant structure." As such, these are specifically not processes that are used in the semiconductor industry for thin film processing. These are specifically not processes as claimed in the present invention, "... built up by a series of thin films..." To the contrary, Takeuchi teaches away from using thin film processing by teaching forming the piezoelectric elements by a thick film-forming method. Thus, Applicant respectfully submits that claim 1 patentably distinguishes over Takeuchi.

Claims 7 and 13 also recite the features discussed above and are therefore patentable over Takeuchi. Claims 2-6, 8-12, and 14-17 are dependent from claims 1, 7, and 13, respectively. Thus, Applicant respectfully submits that claims 2-6, 8-12, and 14-17 are patentable over Takeuchi.

Further, Takeuchi does not disclose or teach many other recited features, such as matched differential pairs. The elements in Takeuchi's Figure 4 are not matched differential pairs. In

Figure 4, the elements 19a and 19b do not have equal area. One of the advantages of having matched differential pairs is that they allow the device to differentiate specific directions of physical motion, to reject extraneous environmental effects, and to simultaneously control or measure motion in multiple directions (see page 20, lines 3-9; page 19, lines 14-16).

Applicant has also noted that the Examiner is silent on claim 18. In light of the discussion above, claim 18 is also patentable over Takeuchi.

Conclusion

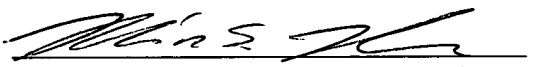
In view of the above, it is respectfully submitted that the present application is in condition for allowance. Reconsideration of the present application and a favorable response are respectfully requested.

If a telephone interview would be helpful in resolving any remaining issues, please contact the undersigned at 612-752-7367.

Respectfully submitted,

DORSEY & WHITNEY LLP
Customer Number 25763

Date: October 7, 2005

By: 

Min (Amy) S. Xu, Reg. No. 39,536
Intellectual Property Department
Suite 1500
50 South Sixth Street
Minneapolis, MN 55402-1498